

We Claim:

1. A maleimide cluster comprising a core molecule wherein five or more maleimides are each attached to the core.
2. A maleimide cluster comprising a carbohydrate core wherein two or more maleimides are each attached to the core.
3. A maleimide cluster comprising a core molecule wherein five or more maleimides are each attached to the core by a linker.
4. A maleimide cluster comprising a carbohydrate core wherein two or more maleimides are each attached to the core by a linker.
5. A maleimide cluster comprising a cholic acid core wherein two or more maleimides are each attached to the core.
6. A maleimide cluster comprising a cholic acid core wherein two or more maleimides are each attached to the core by a linker.
7. The maleimide cluster of claim 1, comprising six or more maleimides.
8. The maleimide cluster of claim 1, comprising seven or more maleimides.
9. A maleimide cluster comprising a core molecule wherein two or more maleimides are each attached to the core and wherein the core is selected from the group consisting of monosaccharides, polyols, oligosaccharides, cyclic oligosaccharides, polyamines, cholic acid, cholesterol, cyclic peptides, porphyrins and calyx[4]arene.
10. The maleimide cluster of claim 7, wherein the core is a monosaccharide.
11. The maleimide cluster of claim 7, wherein the core is a polyol.
12. The maleimide cluster of claim 7, wherein the core is an oligosaccharide.
13. The maleimide cluster of claim 7, wherein the core is a cyclic oligosaccharide.
14. The maleimide cluster of claim 7, wherein the core is a cholic acid.
15. A maleimide cluster comprising cyclodextrin wherein one or more maleimides are each attached to the cyclodextrin by a linker.
16. A maleimide cluster comprising at least two cores wherein each core contains one or more maleimides.

17. A maleimide cluster comprising a polyol core, wherein one or more maleimides are each attached to the core.
18. A maleimide cluster comprising a polyol core, wherein two or more maleimides are each attached to the core by a linker.
19. A multivalent peptide or protein comprising the maleimide cluster of any one of claims 1-18 with peptides or proteins covalently attached to the maleimide.
20. A multivalent peptide or protein comprising the maleimide cluster of any one of claims 1-18 with peptides or proteins covalently attached to the maleimide, wherein the covalently attached peptides or proteins are identical in their amino acid sequence.
21. A multivalent peptide or protein comprising the maleimide cluster of any one of claims 1-18 with peptides or proteins covalently attached to the maleimide, wherein the covalently attached peptides or proteins differ in their amino acid sequence and there are two or more different peptides or proteins.
22. A method of vaccination comprising administering a multivalent peptide or protein in an amount sufficient to elicit a protective immune response in an animal, wherein the multivalent peptide or protein comprises peptides or proteins covalently attached to the maleimide cluster of any one of claims 1-18.
23. The method of claim 22, wherein the covalently attached peptides or proteins are identical in their amino acid sequence.
24. The method of claim 22, wherein the covalently attached peptides or proteins differ in their amino acid sequence and there are two or more different peptides or proteins.
25. A method of delivering a peptide drug comprising administering a multivalent peptide or protein containing a therapeutically effective amount of the peptide or protein drug to a patient in need thereof, wherein the multivalent peptide or protein comprises peptides or proteins covalently attached to the maleimide cluster of any one of claims 1-18.
26. The method of claim 25, wherein the covalently attached peptides or proteins are identical in their amino acid sequence.

27. The method of claim 25, wherein the covalently attached peptides or proteins differ in their amino acid sequence and there are are two or more different peptides or proteins.
28. A method of making a multivalent peptide or protein comprising contacting peptides or proteins containing a thiol group with the maleimide cluster of any one of claims 1-18.
29. The method of claim 28, wherein the peptides or proteins are identical in amino acid sequence.
30. The method of claim 28, wherein the peptides or proteins differ in their amino acid sequence and there are two or more different peptides or proteins.
31. The method of claim 28, wherein the peptides or proteins are identical in amino acid sequence.
32. A method of producing polyclonal antibodies to a peptide or protein comprising administering said peptide or protein covalently attached to the maleimide cluster of any one of claims 1-18 to an animal and isolating the polyclonal antibodies produced.
33. A method of producing monoclonal antibodies to a peptide or protein comprising administering said peptide or protein covalently attached to the maleimide cluster of any one of claims 1-18 to an animal, isolating the spleen to produce hybridomas and isolating the monoclonal antibodies produced.
34. A method for targeting specific cells or cellular organelles for delivery of a compound comprising a maleimide cluster comprising an attached targeting protein
35. A method of making a multivalent peptide or protein comprising adding a cysteine to said peptide or protein and contacting with a maleimide cluster to form a covalent bond.
36. A method of making a multivalent compound comprising covalently adding a thiol to a compound and contacting with a maleimide cluster to form a covalent bond.